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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT231/365AK	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI2004/050168	International filing date (day/month/year) 19.11.2004	Priority date (day/month/year) 26.11.2003
International Patent Classification (IPC) or national classification and IPC D21F7/04, D21G9/00, G01N21/89		
Applicant Metso Paper Inc. et al		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 3 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:

- ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

- ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

Date of submission of the demand 10-06-2005	Date of completion of this report 21-10-2005
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Form PCT/IPEA/409 (cover sheet) (April 2005)

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2004/050168

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-11 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 13-15 received by this Authority on 10.06.2005
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1-3 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2004/050168

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-10</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The object of the invention concerns a method and an arrangement in tail threading in a web forming machine in which monitoring takes place of both the formation of the threading tale and its transfer to the draw point.

The following documents are cited in the International Search Report:

D1: WO 03080928 A1
D2: US 4154004 A
D3: EP 1335067 A1

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1-10 is not considered to be anticipated by these documents. None of the documents, or any relevant combination of them, reveals a method in monitoring the holding point of the tail during tail threading and the related arrangement described by these claims.

According to the arguments stated above, the invention claimed in claims 1-10 is novel, considered to involve an inventive step and to have industrial applicability.

CLAIMS

1. A method in tail threading in a web-forming machine, in which a threading tail is formed from the web, and is transferred to the production section (10, 12 - 14) of a web-forming machine including a draw point (21), and in which method monitoring takes place of both the formation of the threading tail and its transfer to the draw point (21), which is at the start of the said production section (10, 12 - 14), and from which the threading tail is pulled in the tail threading towards a holding point (24) at the end of the production section (10, 12 - 14), characterized in that in the method the holding point (24) and its environment that terminates the tail threading of the production section (10, 12 - 14) in question are monitored in the method, in order to detect the threading tail at the holding point (24) and thus to determine the success of the tail threading, and the formation of the threading tail and its transfer and the holding point are each monitored separately.

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2. A method according to Claim 1, characterized in that, in addition, some other selected point on the relevant production section (10, 12 - 14) of the web-forming machine is monitored.

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3. A method according to Claim 1 or 2, characterized in that the tail threading is monitored by imaging different points and storing the image information obtained in the imaging and display it synchronized at a particular point in the threading tail.

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4. A method according to Claim 3, characterized in that when deviations appear in the tail threading, the location of the problem point is determined on the basis of the image information stored in the monitoring.

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5. A method according to Claim 4, characterized in that the location of the problem point is determined on the basis of the distance of the progression threading tail calculated from the time-specific image information, which distance of progression is applied to the monitored production section (10, 12 - 14) of the web-forming machine.

6. An arrangement in tail threading in a web-forming machine, which web-forming machine includes

- 10 - sequential production sections (10, 12 - 14), in connection with the first production section (10, 12 - 14) of which there are cutting means (16) for cutting the threading tail from the web being formed on the web-forming machine,
- threading means (15) in the second production section (10, 12 - 14) for threading the threading tail over the production section (10, 12 - 14) in question, which threading means (15) form a draw point (21) at the start of the second production section (10, 12 - 14),
- transfer means (18) between the production sections (10, 12 - 14) for transferring the threading tail formed in the first production section (10, 12 - 14) to the threading means (15) of the second production section (10, 12 - 14),
- a holding point (24) at the end of the second production section (10, 12 - 14), to which the threading means (15) are arranged to extend, and
- control equipment (25) for controlling the means (15, 16, 18),

the arrangement further including

- camera devices (26) between the production sections (10, 12 - 14), for monitoring the formation of the threading tail and its transfer to the draw point (21), and
- memory devices (27) for storing the image information imaged using the camera devices (26) and displaying it in a desired manner,

35 characterized in that camera devices (26') are also arranged in connection with the draw point (24), for detecting the threading tail at the draw point (24) and thus for determining the

success of the tail threading, at which draw point (24) the tail threading of the second production section (10, 12 - 14) terminates and the camera devices (26, 26') include three cameras (28 - 30), of which the first camera (26) is arranged
5 in connection with the cutting means (16), the second camera (29) in connection with the draw point (21), and the third camera (30) in connection with the holding point (24).

7. An arrangement according to Claim 6, characterized in
10 that the camera devices (26, 26') include in addition a fourth camera (31), which is arranged to be set up at a selected point in the relevant production section (10, 12 - 14) of the web-forming machine.

15 8. An arrangement according to Claim 6 or 7, characterized in that the memory devices (27) are connected to the control equipment (25), in order to combine the properties of the production section (10, 12 - 14) of the web-forming machine and the image information.

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9. An arrangement according to any of Claims 6 - 8, characterized in that the camera devices (26, 26') in the various production sections (10, 12 - 14) of the web-forming machine are connected to the memory devices (27) arranged as a
25 single totality.

10. An arrangement according to Claim 6 or 7, characterized in that each camera (28 - 31) is a digital camera, preferably a digital high-speed camera.